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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/739,839	12/20/2000	Yusuke Kawasaki	1080.1088/JDH	3883

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EXAMINER

HENNING, MATTHEW T

ART UNIT	PAPER NUMBER
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2131

DATE MAILED: 07/15/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/739,839	Applicant(s) KAWASAKI ET AL.	
	Examiner Matthew T Henning	Art Unit 2131	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 December 2000.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-35 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-35 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 20 December 2000 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>01/31/2003</u> . | 6) <input type="checkbox"/> Other: _____ |

This action is in response to the communication filed on 12/20/2000.

DETAILED ACTION

1. Claims 1-35 have been examined.

Title

2. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

Priority

3. The application has been filed under Title 35 U.S.C §119, claiming priority to Japanese application 2000212815, filed July 13, 2000.
4. The effective filing date for the subject matter defined in the pending claims in this application is July 13, 2000.

Information Disclosure Statement

5. The information disclosure statement (IDS) submitted on 01/31/2003 is in compliance with the provisions of 37 CFR 1.97. Accordingly, the examiner is considering the information disclosure statement.

Drawings

6. The drawings filed on 12/20/2000 are acceptable for examination proceedings.

Specification

7. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The

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form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

8. The abstract of the disclosure is objected to because

Lines 3-4: "The present invention relates to a processing apparatus comprised with" can be implied and therefore must be removed.

The examiner also notes that the abstract consists of two paragraphs and urges the applicant to revise the abstract such that it consists of only one paragraph.

Correction is required. See MPEP § 608.01(b).

9. The disclosure is objected to because of the following informalities:

Page 19 Line 26 recites "SC6" and should read CS6 to be consistent with Fig. 1.

Page 39 Line 16 recites "is s flow" which should read "is a flow".

Appropriate correction is required.

Claim Objections

10. The applicant is reminded that a series of singular dependent claims is permissible in which a dependent claim refers to a preceding claim which, in turn, refers to another preceding claim.

A claim which depends from a dependent claim should not be separated by any claim which does not also depend from said dependent claim. It should be kept in mind that a dependent claim may refer to any preceding independent claim. In general, applicant's sequence will not be changed. See MPEP § 608.01(n).

Claim Rejections - 35 USC § 112

11. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

12. Claims 11-12 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

13. Claim 11 recites the limitation "said memory" in line 11. There is insufficient antecedent basis for this limitation in the claim.

14. Claim 12 recites the limitation "said predetermined initialization operation" in line 3. There is insufficient antecedent basis for this limitation in the claim. For purposes of searching prior art, the examiner will assume the limitation should have read, "said predetermined initial operation".

Claim Rejections - 35 USC § 103

15. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the

prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

16. Claim 1 rejected under 35 U.S.C. 103(a) as being unpatentable over Taguchi et al. (U.S. Patent Number 5,915,025) hereinafter referred to as Taguchi, and further in view of Curran et al. (U.S. Patent Number 4,525,599) hereinafter referred to as Curran.

Taguchi disclosed an internal circuit (See Taguchi Fig. 31 Element 150) including a CPU executing programs (Element 151), at least one internal circuit having a predetermined function (Elements 152-157) and a bus line connecting said CPU to said internal device (See connection from 152 to 153 and 154), extending externally (See connection from 153 and 154 to 160) and transferring an address and data (See Col. 8 Lines 55-59).

Taguchi further disclosed an external circuit (Elements 161-166) provided externally of an externally extending portion of said bus line (See all elements below 160) and including at least one external device having a predetermined function (Elements 161-166).

Taguchi also disclosed that the internal circuit includes a ciphering section (Element 153) interposed at an entrance to an external side (See connection from 153 to 160) and ciphering the data on the bus line by ciphering patterns according to a plurality of regions divided from an address space allotted to entirety of said at least one external device (See Col. 8 Paragraph 5). However, Taguchi failed to disclose the ciphering of the address.

Curran teaches that software can be protected from illegal copying by encrypting the addresses of the data being accessed in order to provide a non-sequential ordering of the data in memory as well as encrypting the data stored therein (See Col. 1 Paragraph 5 – Col. 2 Paragraph 1 and Col. 3 Paragraph 3).

It would have been obvious to the ordinary person skilled in the art at the time of invention to employ the teachings of Curran to the invention of Taguchi in order to encrypt the addresses as well as the data on the external bus. This would have been obvious because the ordinary person skilled in the art would have been motivated to further protect the software and other data stored external from the data processor from illicit access.

17. Claims 2-3, 6-22, and 25-35 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Taguchi and Curran.

18. Claim 2 recites the ciphering patterns adopted by said ciphering section include one ciphering pattern in which neither the address nor data is ciphered (See Taguchi Col. 18 Paragraph 2 wherein only part of the data is encrypted).

19. Claim 3 recites that the external circuit includes a plurality of external devices (See Taguchi Fig. 31 Elements 161-166), and said ciphering section performs ciphering using ciphering patterns according to said plurality of external devices, respectively (See Taguchi Fig. 15).

20. Claim 6 recites the ciphering pattern determination means for recognizing a constitution of said external circuit and determining a ciphering pattern of said ciphering section according to the constitution of said external circuit (See Taguchi Col. 9 Paragraph 5 – Col. 10 Paragraph 1).

21. Claim 7 recites that the said ciphering section ciphers the address and the data on said bus line by ciphering patterns according to the plurality of regions divided from the address space allotted to the entirety of said no less than one external device and according to application programs executed by said CPU (See Fig. 15 and Col. 8 Lines 55-63).

22. Claim 8 recites a deciphering section connected to the externally extending portion of said bus line, and returning the ciphered address and the data on the bus line to an address and data which are not ciphered (See Taguchi Fig. 31 Element 154 and Col. 10 Lines 25-27).

23. Claim 9 recites ciphering pattern change means for changing a ciphering pattern whenever a predetermined initialization operation is carried out for one of the plurality of regions divided from the address space allotted to the entirety of said at least one external device (See Taguchi Fig. 11, Fig. 13, and Fig. 15).

24. Claim 10 recites that the ciphering section adopts a ciphering pattern in which ciphered data is changed according to the address, for one of the plurality of regions divided from the address space allotted to the entirety of said at least one external device, to thereby cipher the data (See Taguchi Fig. 11, Fig. 13, and Fig. 15).

25. Claim 18 recites that the internal circuit holds a ciphering pattern adopted by said ciphering section (See Taguchi Fig. 31 Element 155), the processing apparatus further comprises a tamper detection section detecting tamper, and ciphering pattern destruction means for destroying the ciphering pattern held in

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said internal circuit in response to tamper detection made by said tamper detection section (See Col. 9 Paragraph 2).

26. Claim 11 recites an internal circuit including a CPU executing programs, at least one internal device having a predetermined function, and a bus line connecting said CPU to said internal device, extending externally and transferring an address and data (See Taguchi Fig 31 and Claim 1 rejection); and an external circuit provided externally of the externally extending portion of said bus line, and storing information (See Taguchi Fig. 31 Elements 161 and 166), wherein said internal circuit has information rewrite means for ciphering and rewriting at least part of the information stored in said memory in a predetermined initial operation (See Taguchi Fig. 13).

27. Claim 12 recites that the predetermined initial operation is an initialization operation when the power is first turned on. Taguchi disclosed checking for expiration of keys and updating the keys and re-ciphering accordingly (See Taguchi Fig. 12 and Fig 13). It was inherent that in order for proper key management, the expiration times were checked constantly, or else the keys would have expired unknowingly. Therefore, it was also inherent that the expiration times were checked upon power up, which constitutes an initialization procedure.

28. Claim 13 recites the information rewrite means generates a random number, and performs ciphering by adopting a ciphering pattern using the generated random number (See Taguchi Col. 14 Lines 4-6).

29. Regarding claims 14-17, see Taguchi Col. 21 Paragraphs 5-6.

30. Claim 19 is rejected for the same reasons as claim 18 above.
31. Claim 20 is rejected for the same reasons as claim 1 above.
32. Claim 21 is rejected for the same reasons as claim 2 above.
33. Claim 22 is rejected for the same reasons as claim 3 above.
34. Claim 25 is rejected for the same reasons as claim 6 above.
35. Claim 26 is rejected for the same reasons as claim 7 above.
36. Claim 27 is rejected for the same reasons as claim 9 above.
37. Claim 28 is rejected for the same reasons as claim 10 above.
38. Claims 29-35 are rejected for the same reasons as claims 11-17 respectively above.
39. Claims 4 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Taguchi and Curran as applied to claims 1 and 20 respectively above, and further in view of IBM (IBM Technical Disclosure Bulletin 19800601).

The combination of Taguchi and Curran disclosed the use of random number in generating keys (See Taguchi Col. 14 Lines 4-6), but the combination of Taguchi and Curran failed to disclose any information regarding times when the external bus was not being used.

IBM teaches that memory can be tested by generating random addresses, storing random data to the random addresses, and then checking that the generated data and the stored data are consistent.

It would have been obvious to the ordinary person skilled in the art at the time of invention to employ the teachings of IBM in the combination of Taguchi

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and Curran in order to test the memory when the external bus was not in use. This would have been obvious because the ordinary person skilled in the art would have been motivated to ensure that the external memory was working properly, thus ensuring data integrity.

40. Claims 5 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Taguchi and Curran as applied to claims 1 and 20 respectively above, and further in view of Milhaupt et al. (U.S. Patent Number 5,706,445) hereinafter referred to as Milhaupt.

The combination of Taguchi and Curran disclosed the use of a processor and a separate encryption circuit (See Taguchi Fig. 31), but failed to disclose using separate clocks with the encryption clock being set at a higher frequency than the processor clock. However, Taguchi and Curran did disclose that when encrypted software was input to the system at the CD-ROM drive (See Taguchi Fig. 31) the decryption means had to decrypt the software and then the encryption means had to encrypt the software and store the software in memory before the processor could access the software (See Taguchi Col. 10 Paragraph 1).

Milhaupt teaches that reducing the clock rate to the processor during times when the processor is not being used can dramatically reduce the power consumed by a processor.

It would have been obvious to the ordinary person skilled in the art to employ the teachings of Milhaupt in the combination of Taguchi and Curran in order to modulate the clock to the processor. This would have been obvious

because the ordinary person skilled in the art would have been motivated to reduce the power consumed by the data processor while the processor was idle and waiting for the software to be re-encrypted and stored in memory.

Conclusion

41. Claims 1-35 have been rejected.
42. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.
 - a. Best (U.S. Patent Number 4,168,396) disclosed a microprocessor for executing encrypted software, involving the combination of the data with its address.
 - b. Best (U.S. Patent Number 4,278,837) disclosed a microprocessor for executing encrypted programs in which the addresses for the data were scrambled prior to storage.
 - c. Westheimer et al. (U.S. Patent Number 4,573,119) disclosed a method of software protection involving encrypting both the data and address of the software.
 - d. Grider et al. (U.S. Patent Number 5,515,540) disclosed a method of data security involving encrypting the data and address as well as employing a tamper protection circuit.
 - e. Little et al. (U.S. Patent Number 6,272,637) disclosed a method of data security involving encrypting the data and address as well as employing a power monitoring circuit.

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43. Please direct all inquiries concerning this communication to Matthew Henning whose telephone number is (703) 305-0713. The examiner can normally be reached Monday-Friday from 9am to 4pm, EST.

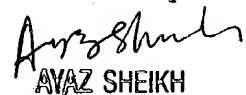
If attempts to reach examiner by telephone are unsuccessful, the examiner's acting supervisor, Ayaz Sheikh, can be reached at (703) 305-9648.

The fax phone number for this group is (703) 305-3718.

Any inquiry of general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 305-3900.



Matthew Henning
Assistant Examiner
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